CONSERVATION OF THE CERVIX UTERI IN OPERATIONS FOR PROLAPSE

A NEW OPERATIVE PROCEDURE

BY

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In reviewing current methods in gynaecology one observes a persisting hesitation to practise the first principle of surgery—preservation of function. A distinction should ever be drawn between women of child-bearing age and those no longer capable of reproduction. In the former, preservation or restoration of function should be our aim; in the latter, certain cure of symptoms by radical means is justifiable. There is a persistent hesitation to adopt planned conservative measures lest symptomatic relief should be incomplete, and there is failure to count the cost at which a radical cure may be purchased. Avoidable hysterectomies are still being performed for "tarry cysts," pus tubes, and even fibroids in comparatively young women, although many successful pregnancies after conservative treatments have been recorded.

The early masters in gynaecology were careful to preserve this distinction between case groups. In prolapse they tended to operate only in the more severe cases usually associated with older women, while pessary treatment was employed for the minor degrees of prolapse found in younger patients. They were conservative, too, in their attitude to lacerations and diseases of the cervix. The apparent success of amputation of the cervix, with or without colporrhaphy, may have caused the pendulum to swing too far in the direction of radical surgical treatment, and it is worth while to analyse some of the harmful after-effects of this change. Modern technique has brought with it wider accomplishment and greater safety, but it has also brought new dangers and new problems.

Cervical Amputation

Cervical amputation was first widely practised by the French surgeons. Huguier, stimulated by the work of Lisfranc, adopted amputation as a routine measure in all cases of procidentia. Marion Sims in 1866 advocated the operation not only for prolapse but also for hypertrophy and disease of the cervix. Sims believed that the operation did not interfere with child-bearing, and quoted two cases of normal pregnancy and labour after his operation. T. A. Emmet in 1869 reported his operation of trachelorrhaphy which he had devised in 1862. Twenty years later, however, he advocated amputation after the manner of Sims for many cases in preference to repair, partly because it was an easier operation and partly because of its more curative effect on symptoms. He then stated that amputation had no effect on fertility, pregnancy, or labour. J. D. Emmet in 1895 advocated a return to trachelorrhaphy in view of the ill effects sometimes found after amputation, a view contradicted by T. A. Emmet in 1897. Meanwhile Schroeder in 1878 and 1880 had devised and reported on 220 cases operated on by his method of circular amputation with every appearance of success.

About this time amputation of the cervix came to be associated with colporrhaphy as an operation for prolapse. In 1888 Cohn reported 105 cases of prolapse so treated by Olshausen and Schroeder, and about the same time Donald independently devised a similar treatment.

In 1914 Fothergill modified the operation by combining amputation of the cervix with the anterior colporrhaphy, and his publication (Fothergill, 1921) of the excellent results obtained led to widespread adoption of his method for all types of prolapse.

Criticisms of Cervical Amputation

Audebert in 1898 was one of the first to draw attention to the ill effects of Schroeder's operation. In a comparison between pregnancies in the same women before and after amputation of the cervix he found this marked difference: before operation these women had twenty-two labours at term and five abortions or premature labours, whereas after operation they shared five labours at term, nine premature labours, and ten abortions. In addition he reported a high incidence of dystocia, often involving incision or dilatation of a stenosed canal. Leonard (1913, 1914), in an extensive analysis of the after-effects of cervical amputation on 128 cases at the Johns Hopkins Hospital, found that four-fifths of the women who might have been expected to become pregnant remained sterile. Of those who became pregnant 50 per cent. had premature interruption of pregnancy, and of those proceeding to term an even larger percentage had difficult and prolonged labours.

Sturmdorf (1916), having noted Leonard's findings, devised his new method of amputation of the cervix, which aimed at complete excision of the cervical mucosa to the internal os with preservation of the cervical muscle. Sturmdorf maintained that by this method disease could be eradicated without any interference with the polarity of the uterus.

Rawls (1921), analysing the same subject, found sterility in 58 per cent. of women after trachelorrhaphy, as compared with 72.6 per cent. after amputation of the cervix. Further, he found that amputation carried a disadvantage in that there were 18 per cent. fewer full-term labours, and 6.2 per cent. more spontaneous abortions occurred after amputation than after trachelorrhaphy. Rawls also noted that three Caesarean sections were necessary in 100 labours after cervical operations, and that relaceration occurred in 40 per cent. of this series.

Brandt (1933) described three cases of abnormal labour following amputation of the cervix—one by Sturmdorf's method and two by circular amputation. One patient died of rupture of the uterus, one developed a large vesico-cervical fistula as the result of rupture of a cervical scar, with extension into the bladder, while in the third Caesarean section was performed as no os uteri could be detected.

Hesseltine (1934) reported a case of labour at term following cervical amputation. After eighteen hours in labour there was no dilatation and no os could be found. Caesarean section was performed as rupture of the uterus seemed imminent, and actual spontaneous rupture of the lower segment occurred while the operation was in progress. Davis (1929) reported a similar case. Gonnet and Mermet (1933) reported another case of obstructed labour, with fatal termination. Many other cases could also be quoted from the literature.

Zoefgen (1936) had found high amputation so inimical to conception that he recommended the operation as a sterilizing measure. Novak (1936) criticized this statement, and quoted two cases of repeated abortion after the operation. He stressed the need for a careful statistical review of the results of amputation in women of child-bearing age.

Repeated Abortion following Amputation

My attention was first drawn to the possibility of repeated abortion as a sequel to cervical amputation by my late chief, Dr. Haig Ferguson. He had the care of a patient whose cervix had been amputated by T. A. Emmet, and who had seven subsequent abortions. Anxiety for an heir made her consent to remain in bed from the very start of a pregnancy, and in this way she had her first and only living child at seven and a half months. Sfameni (1925) recorded a case of amputation of the cervix for leucorrhoea after a normal confinement. This was followed by four successive abortions.

Recent Cases of Abortion

During the past eighteen months several cases of repeated abortion following amputation of the cervix have reported at my out-patient department.

Case 1.—Para 3. Colporrhaphy with amputation of the cervix at the age of 30. During the following six years she had five miscarriages, all necessitating curettage. Sterilization was performed owing to the disability resulting from the repeated abortions.

Case 2.—Para 3. Colporrhaphy with amputation of the cervix at the age of 26. She had four miscarriages in the four years following the operation.

Case 3.—Para 2. Amputation of the cervix at the age of 26. During the following seven years she had three miscarriages, at the sixth, fifth, and sixth months respectively, and came under my charge during the third abortion.

Case 4.—Para 2. Amputation of the cervix at the age of 30. Since operation she has had three miscarriages—one at four and a half months, one at the third month, and one at the fourth month.

Case 5.—Para 1. Colporrhaphy and amputation of the cervix at the age of 26 after one confinement. During the next seven years she had four miscarriages, at times varying from the second to the sixth month. Her only child died recently, and she was desperately anxious to have another. During her last pregnancy she was kept in bed in hospital from the eighth week, but in spite of this she miscarried at the fifth month.

Case 6.—Para 1. Amputation of the cervix at the age of 25. Patient was sterile for five years following the operation and then became pregnant. Before pregnancy the cervical stump had been found flush with the fornices and the uterine cavity only two inches long. At the fifth month the membranes ruptured while she was asleep. Two days later evacuation of the uterus had to be performed, as the cervix remained closed and the uterine content was becoming fetid. Considerable difficulty was experienced in dilating the cicatricial cervix.

Case 7.—Para 1. Amputation of the cervix six months after confinement. During the next eight years she had four miscarriages between the third and fifth months.

In these seven women twenty-four abortions had occurred, and practically every one was incomplete and required curettage. Previous to amputation only one abortion had happened in this series.

Recent Cases of Dystocia

I have also been able to collect a number of cases of dystocia after amputation of the cervix. In the past ten years I have had occasion to perform Caesarean section on five women, at or near term, for pronounced stenosis of the cervix. In three of these cases long and tedious labour failed to produce any dilatation and it was difficult to define a cervical canal. In one case a patient had complete suppression of lochia and developed pyometra. On the tenth day graduated probes were passed with diffi-

culty and a pint of pus was evacuated from the uterus. A rubber tube was stitched into the cervical canal, and adequate drainage and a good recovery followed.

In collecting hospital statistics over a period of eleven years I have been able to find records of eighteen labours at or near term after amputation of the cervix, with or without colporrhaphy. In ten cases the delivery was normal. The other eight cases had serious dystocia: three were delivered by Caesarean section for cervical atresia, three had vaginal Caesarean section, and two had manual dilatation of the cervix with version and extraction. There were three maternal deaths, in each case due to extension of a cervical rupture into the lower uterine segment. One followed vaginal hysterotomy with forceps extraction, one after manual dilatation with version and extraction, and the third after breech extraction. All three deaths occurred in emergency cases—in one complete rupture had taken place, and the child was in the abdominal cavity on admission.

Operative Treatment of the Cervix

A study of the literature and the account of these recent cases force us to the conclusion that amputation of the cervix in a woman of child-bearing age may have one of these unfortunate results—namely, sterility, repeated abortion, premature labour, or serious dystocia. Leonard's figures for sterility, quoted above, are worthy of serious consideration, and large statistical follow-ups are urgently needed. The wastage and dangers involved in these repeated and often incomplete abortions require us to make a careful review of the whole question of cervical function and surgical procedure.

Cervical Repair

In regard to lacerations of the cervix we might at any rate consider a more extended use of Emmet's original operation of trachelorrhaphy. It is often possible, by excising two or more deep lacerations and carefully suturing the edges of the tears, to restore an extremely distorted cervix to an almost normal contour. During recent years I have employed this method on women of child-bearing age with increasing frequency, and have found the results extremely satisfactory, both as regards relief of symptoms and subsequent childbirth. True, the operation scars in the cervix not infrequently split open during delivery, but these can be resutured at the time; even if this is not done the operation has fulfilled its purpose in enabling the woman to carry her pregnancy to term. A more detailed study of statistics in relation to trachelorrhaphy will be the subject of a further paper.

Cauterization

In cases of cervicitis with wide erosion and numerous Nabothian follicles the use of cauterization in preference to amputation might be advocated. Brunet and Salberg (1938) report 538 cases treated in this way by the "nasal loop" cautery with excellent results. In studying over 1,000 cases of cervicitis in the Mayo Clinic, Masson and Parsons (1928) state that the cautery is as effective as amputation in the cure of leucorrhoea; that pregnancy occurs more often, miscarriages are less frequent, labour is more often normal, and subsequent lacerations less liable to occur. Roblee (1931) advocates a combination of cautery and electrocoagulation, and maintains that this procedure entirely supersedes amputation and is never followed by stenosis. Harriman (1929) reports a comparison of cases treated by cautery and electrocoagulation, and is strongly in favour of the latter method, and main-

tains that hypertrophied cervical lips may by this treatment be reduced to normal size. Ende (1929) criticizes cauterization by thermocautery because of the danger of subsequent cervical stenosis, but has obtained excellent results in 200 cases treated by diathermy.

During the past ten years I have treated a large number of cases of cervicitis by diathermy cauterization, and more recently by electrocoagulation. The results, which I hope to publish in detail later, have been extremely satisfactory. Cervical stenosis has been recorded after deep linear and radial cauterization, and I prefer superficial cauterization of the whole eroded area by diathermy followed by multiple stab cauterization at about a dozen points in the cervix, dependent on the extent of the disease. This is followed in a few months by a return of the hyper-

trophied lips to normal size, disappearance of the erosion, and disappearance or amelioration of the systemic and local symptoms.

In cases where there is gross hypertrophy, and where trachelorrhaphy or cauterization is unsuitable, amputation should be as shallow as possible, and high circular amputation should at all costs be avoided.

A New Operative Procedure for Prolapse

(Figs. 1 to 12)

In the case of prolapse in women of child-bearing age the problem is more difficult. The operation devised by Donald and perfected by Fothergill stands supreme in the surgical cure of prolapse, and for women past the menopause is unequalled in its perfect results. For women

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 2.—Two circular incisions are made round the cervix, about one inch apart, and a cuff of vaginal wall is dissected off.
FIG. 3.—A complete cuff of vaginal wall has been removed from the cervix.
FIG. 4.—A triangular flap is removed from the vaginal wall as in the Fothergill colporrhaphy. The apex starts just below the urethra, and the lateral incisions are carried downwards and outwards to the widest part of the upper circular incision round the cervix.

FIG. 5.

FIG. 6.

FIG. 7.

FIG. 8.

FIG. 5.—Starting posteriorly, interrupted sutures fix the cervix to the upper incision.
FIG. 6.—This shows the cervix almost completely sutured to the upper incision. The cervix and uterus are thus carried up to a higher level.
FIG. 7.—The cervix completely sutured to the upper flaps. The lateral angles of the vaginal flaps are joined together and to the cervix by a mattress suture.
FIG. 8.—If the uterus is displaced backwards the peritoneum of the utero-vesical pouch below the bladder is opened.

FIG. 9.

FIG. 10.

FIG. 11.

FIG. 12.

FIG. 9.—The bladder is dissected upwards, and that part of the fundus uteri between the round ligaments, A, is fixed by interrupted catgut sutures to the peritoneum of the utero-vesical pouch, B.
FIG. 10.—Deep interrupted sutures are used to bring the pubo-coccygeus muscles and parametrium together on each side.
FIG. 11.—The anterior vaginal flaps are brought together by interrupted sutures and the anterior colporrhaphy completed.
FIG. 12.—The completed anterior colporrhaphy. The posterior colporrhaphy is then performed in the usual way: no illustrations of this are shown.

liable to further pregnancies, however, the amputation of the cervix, which is an integral part of the operation, may be disadvantageous for reasons we have seen, and because of this I have attempted to devise a modification suitable for young women which, while preserving the essentials of the Fothergill method, may yet conserve the cervix. The operation is applicable to those cases of prolapse in young women where there is no great degree of cervical hypertrophy, and where the total length of the uterine cavity to the external os does not exceed three to three and a half inches. It is applicable to that type of prolapse in which there is relaxation of all the uterine supports, the pelvic floor, and the vaginal walls, the uterus being at a low level in the vagina.

Technique.—Briefly the steps are these. A circular incision is made about half an inch above the external os, and another an inch to one and a half inches above this, and a complete circle of superficial vaginal epithelium is stripped off (Figs. 1, 2, and 3). A V-shaped excision of vaginal epithelium, as done in the ordinary Fothergill colporrhaphy, is then made, starting from just below the external urinary meatus and extending downwards and outwards to join at the lateral aspect of the upper circular incision (Fig. 4). The cervix is then stitched to the vaginal epithelium, starting posteriorly and working round to the front on each side, and thus the Fothergill principle of sliding the uterus up is maintained but with conservation of the cervix (Figs. 5, 6, and 7). The anterior colporrhaphy is then finished in the ordinary way (Figs. 10, 11, and 12), and the operation completed by posterior colporrhaphy and perineorrhaphy.

Unfortunately one finds in practice that in this operation the uterus tends to remain in the pelvic axis, and as at the same time in a young woman one has to be careful not to cause undue narrowing of the vagina, there may for this reason be some possibility of recurrence. One of the greatest advantages of the Fothergill operation is that the uterus tends to be brought into anteversion and so to be at right angles to the vagina, thus preventing any possible descent of the uterus; and, even if this anteversion does not always result, the scar tissue consequent on amputation of the cervix will almost certainly help to prevent any future tendency for the uterus to come down. For this reason a modification of the anterior colporrhaphy in the new operative procedure may be useful to antevert the uterus, and so lessen the chance of recurrence. This may be done by opening the anterior peritoneal pouch below the bladder, and stitching the anterior portion of the uterus at the level of the round ligaments to the peritoneum of the utero-vesical pouch as a step before performance of the anterior colporrhaphy (Figs. 8 and 9). This gives a more satisfactory result, and one case in which it was performed was followed by pregnancy and labour without any tendency to recurrence of the prolapse or retroversion. Perhaps an even better result can be obtained by anteverting the uterus, using the Alexander Adams method of suspension; but this involves a second incision, is a tricky operation, and adds somewhat to the time taken. May I stress that the object of bringing the uterus forward is not to cure the symptomless retroversion but to place the uterus at right angles to the vagina and so help to prevent recurrence of the prolapse.

I have performed this operation in nineteen cases during the past three years. This is a small number, but the severer degrees of prolapse are not common in young women, and in the minor degrees operation was not advised until after the menopause. The ages varied between 23 and 32; in ten of the cases vaginal fixation was

combined with the anterior colporrhaphy, in one the colporrhaphy was supplemented by the Alexander Adams method of suspension, and in the remainder there was no associated backward displacement of the uterus requiring correction. The results have been uniformly satisfactory: there has been complete relief from symptoms, without any evidence of recurrence. One patient treated by the modified colporrhaphy with vaginal fixation has subsequently been delivered normally at term with no complications and no recurrence of the prolapse.

It seems presumptuous to suggest any improvement on that superb operation devised by Donald and Fothergill. Perhaps, however, its very success has led to its employment in cases for which it was scarcely devised, and, in view of its one limitation, the maintenance of the essential principles of the operation, but without its one possible disadvantage, may be worth consideration.

In conclusion it would appear that there is a very definite risk in pregnancy and labour after amputation of the cervix, and therefore, in the event of its being necessary to perform this operation on a woman liable to further pregnancies, she should be given instructions regarding the necessity for supervision during a subsequent confinement.

Summary

In gynaecology the necessity is stressed for subdividing cases undergoing surgical treatment into two groups—women of child-bearing age and those no longer capable of reproduction.

The literature of cervical amputation is reviewed, and various complications and harmful sequels of the operation are discussed.

A series of recent cases of repeated abortion following amputation of the cervix is reported.

A series of recent cases of dystocia following amputation of the cervix is recorded.

Methods of curing lacerated or diseased cervix, and prolapse, are suggested.

The technique of a new operative procedure for prolapse is given, with the results obtained.

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